

ABSTRACT OF THE DISCLOSURE

Self-tuning objects for developing programs to be executed on parallel computers. A trace file reflecting the sequence of expressions in a user program that include the self-tuning objects is generated during simulation. The trace file is divided into trace file blocks such that data and computational dependencies between trace blocks is minimized. The trace file blocks are converted into source code expression blocks, which are each parameterized to reflect a number of conventional compiler optimization techniques. Various optimization parameter values are applied to the expression blocks to generate minimal timing, compiled versions. The minimal timing compilations of the expression blocks are linked into the user program and executed in response to detection of self-tuning object expressions in the user code. The minimal timing compilations are then mapped to processors within the target parallel computer system for execution.

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